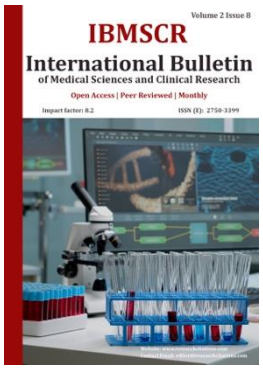

MORPHOLOGICAL STRUCTURE OF FOLLICLES AND OVA OF THE FEMALE BODY

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https://doi.org/10.5281/zenodo.14508750

Annotation. The follicle and egg are key elements of the female reproductive system. They are closely related to each other and are involved in the processes of maturation, ovulation and reproduction. Their structure is carefully adapted to perform these functions.

Key words: Female reproductive system, Follicle, Primordial follicles, Egg, Cytoplasm, Granulosa cells.

The follicle is the structure of the ovary, inside which the egg cell matures. Follicles go through several stages of development:

1. Primordial follicles:

Are dormant from birth to the moment of activation.

They consist of an oocyte of the first order, surrounded by a single layer of flat follicular cells.

2. Primary follicles:

Flat cells turn into cubic cells, forming a layer of granulose cells.

The egg cell increases in size and begins to secrete the pellucid zone — the glycoprotein membrane.

3. Secondary (preantral) follicles:

Several layers of granulosa cells are formed.

The outer shell — the tecal one — is differentiated into the inner (the tecal interna) and the outer (the tecal externa).

4. Tertiary (antral) follicles:

An antrum appears, a cavity filled with follicular fluid.

Granulose cells form a radiant crown surrounding the oocyte.

5. Graaf's follicle:

This is a mature follicle ready for ovulation.

Contains a large oocyte of the second order, surrounded by a zone of pellucida and cells of the radiant crown.

After ovulation, the remainder of the follicle is transformed into the corpus luteum, which secretes hormones necessary to maintain pregnancy.

The egg

Egg (oocyte) It is one of the largest cells in the female body. Its structure is adapted to participate in fertilization and ensure the initial stages of embryo development.

1. Cytoplasm:

Contains nutrients and organelles necessary for the first divisions of the zygote.

Is enriched with mitochondria, which play a key role in providing the energy needs of the cell.

2. The core:

Is in the stage of meiosis. Before ovulation, the oocyte completes meiosis I and enters the stage of meiosis II, which ends only after fertilization.

3. The pellucid zone:

Glycoprotein membrane that protects the egg and ensures interaction with the sperm during fertilization.

4. Radiant crown:

Layer of granulosa cells surrounding the pellucid zone.

Provides nutrition to the egg and participates in its transportation through the fallopian tube.

The interaction of follicle and egg

The follicle provides the egg with protection, nutrition and the necessary hormonal signals during its maturation. In turn, the maturing egg cell secretes factors that affect the development of granulose and tecal follicle cells. This interaction ensures coordinated growth and development of the follicle up to the ovulation stage.

Morphology of eggs

The egg, or oocyte, is one of the largest cells in the body and plays a key role in the reproduction process. Its morphology is carefully adapted to perform its reproductive function, ensuring successful fusion with the sperm and the beginning of embryonic development.

General characteristics

The egg is a spherical haploid cell surrounded by several protective shells. Its size varies significantly depending on the type of organism, but in general it is much larger than most other cells in the body. Such a large structure is due to the need to accumulate nutrients and organelles to support early embryonic development.

The key characteristics of egg morphology are:

1. Cytoplasm: rich in organelles such as mitochondria, ribosomes, and numerous vesicles. It also contains reserves of nutrients (yolk) necessary for the development of the embryo before implantation.

2. Nucleus: contains a haploid set of chromosomes formed as a result of meiosis. Before fertilization, the nucleus is in the stage of completion of meiosis II.

3. Shells:

Pellucid zone: a glycoprotein shell that protects the egg from mechanical damage and provides specific interaction with the sperm.

Coronal radiate: a layer of follicular cells surrounding the pellucid zone and playing a role in the nutrition of the oocyte.

Morphological variations in different organisms

In different types of eggs, they differ in size, yolk content and shell structure. These differences are due to evolutionary adaptations and the type of embryo development.

1. Isolecital eggs: characteristic of mammals, contain evenly distributed yolk in small quantities.

2. Telolecital eggs: have a large yolk sac shifted to one of the poles of the cell (for example, in reptiles and birds).

3. Centrolecital eggs: contain a yolk in the central part, surrounded by a thin layer of cytoplasm (in insects).

Morphological changes in the process of ovulation and fertilization

During ovulation, the egg is released from the follicle and enters the fallopian tube. Its morphology ensures successful interaction with the sperm. After sperm penetration:

- A cortical reaction is triggered in the pellucid zone, preventing the penetration of other spermatozoa.
- Completion of meiosis II and formation of the female pronucleus occurs.
- Male and female pronuclei merge to form a zygote.

Conclusion

The structure of the follicle and egg demonstrates the complex biological architecture necessary to ensure the reproductive function of the female body. Their coordinated development plays a key role in maturation and fertilization, which makes them essential elements of the reproductive system.

The morphology of the egg is the result of complex evolution and is carefully tuned to perform a reproductive function. Its structure provides not only protection and interaction with the sperm, but also the accumulation of resources to maintain the early stage of development of a new organism.

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